

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

South Blackbird Creek

Water Body Segment at a Glance:

County:	Putnam
Nearby Cities:	Unionville and Martinstown
Length of impaired segment:	13 miles
Length of impairment within segment:	5.0 miles
Pollutant:	Ammonia
Source:	Unknown
Water Body ID:	0655



State Map Showing Location of Watershed

Scheduled for TMDL development: 2016

Description of the Problem

Beneficial uses of South Blackbird Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (Fish Consumption)
- Whole Body Contact Recreation

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

- The criteria for ammonia are found in Missouri's Water Quality Standards at 10 CSR 20-7.031. These values are taken from Table B3 and vary with water temperature and pH. At typical temperatures and pH values, the chronic criterion¹ for ammonia would be 1.5 mg/L in the summer and 3.1 mg/L in the winter. The acute criterion at 7.8 pH for cool and warm-water fisheries is 12.1 mg/L.

¹ Acute criteria apply to short exposures to toxic conditions that aquatic creatures can survive without harm. Chronic criteria apply to conditions producing adverse effects of aquatic life or wildlife following long term exposure but having no readily observable effect over a short time period. Chronic criteria are much lower than the acute criteria.

Background information and water quality data

South Blackbird Creek is a northern Missouri prairie stream that flows east to join Blackbird Creek in southeastern Putnam County. Ammonia is a common by-product of wastewater treatment and, under certain conditions, can be toxic to aquatic life. However, there are no known sources of wastewater along the impaired segment, so the source of the ammonia is unknown. Evidence for this impairment is based on data gathered by the department from 2002-2006. A water body is judged to be impaired if the chronic or acute numeric criteria are exceeded on more than one occasion during the last three years for which data is available. In South Blackbird Creek, there were three exceedences of the chronic standard in last three years of data (see table below).

According to the Department's 2008 303(d) listing methodology², a water body must be in exceedance of the acute criterion continuously for 24 hours and the chronic criterion 30 days to be considered an exceedance of the standard. An assessment of available stream data using this methodology found that there is good evidence that the acute standard was exceeded once, on March 12, 2003. (data not shown). For the chronic criteria (table below), the sampling dates were too far apart to provide strong evidence that any of the exceedances exceeded 30 days in length. Thus, this stream is judged to be unimpaired by ammonia. However, ammonia levels in South Blackbird are typically high on some occasions and further monitoring should be scheduled to determine the source of this ammonia. South Blackbird Creek is on the current 303(d) List for ammonia and, according to the U.S. Environmental Protection Agency, the these data do not show "good cause" for delisting this stream for ammonia.

Ammonia as Nitrogen, or NH₃N, Data for South Blackbird Creek

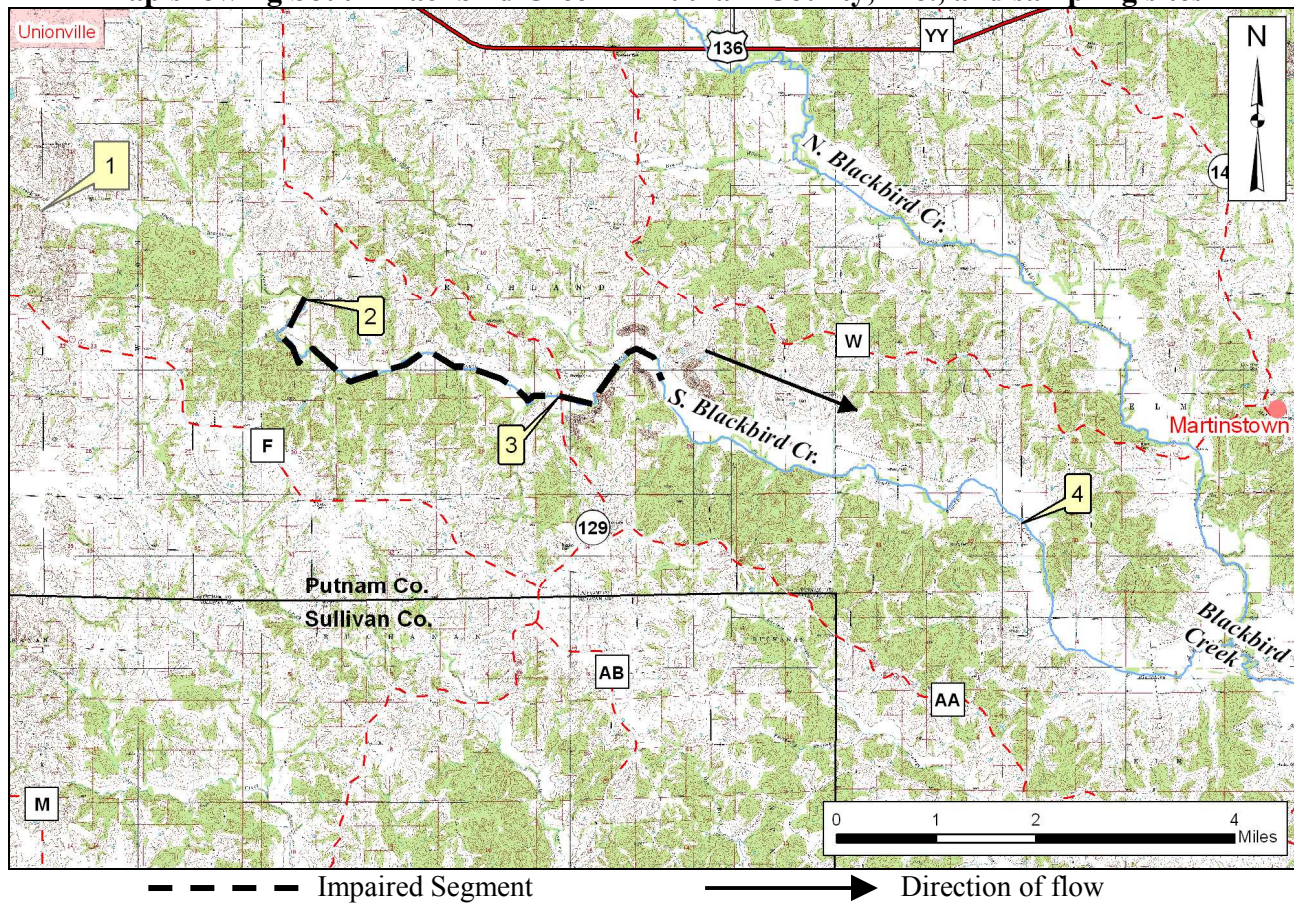
Site	Date	°C	pH	NH ₃ N
2	12/10/02	2	7.9	1.5
2	1/14/03	0	8.2	3.89
2	3/18/03	17	8.5	9.14
2	3/12/03		7.7	2.74
1	7/14/05	20	7.7	1.26
1	11/9/05	8.7	8.1	0.67
1	5/26/06	19.8	7.6	2.61
3	7/14/05	21.9	7.7	0.5
3	11/9/05	10.3	7.7	0.03
3	2/17/06	0.7	7.9	5.08
3	5/26/06	20.3	7.9	0.12
4	7/14/05	23.4	8	0.01499
4	11/9/05	11.2	7.8	0.09
4	5/26/06	23.9	8	0.01499

Shaded cells indicate exceedance

On the next page there is a map of South Blackbird Creek showing the impaired segment and the location of the sampling sites.

² This methodology may be accessed at: www.dnr.mo.gov/env/wpp/waterquality/303d.htm

Map showing South Blackbird Creek in Putnam County, Mo., and sampling sites



Sample Sites

- 1 – S. Blackbird Cr. at Premium Standard Farms Green Hills (Site 56)
- 2 – S. Blackbird Cr. at Fern Trail
- 3 – S. Blackbird Cr. at Hwy 129
- 4 – S. Blackbird Cr. 2.5mi. WSW of Martinstown

For more information call or write:

Missouri Department of Natural Resources

Water Protection Program

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